

REMARKS

The applicants thank the Examiner for the thorough examination of the application. No new matter is believed to be added to the application by this amendment.

Status of the Claims

Claims 1-6 and 11-13 are pending in this application. Claim 1 has been amended to remove reference to dry spinodal decomposition, thereby to recite the preferred wet spinodal composition discussed at page 31, line 27 of the specification. Claims 3 and 4 have been amended to improve their language without reducing their scope.

Rejection under 35 U.S.C. § 103(a) over Honda

Claims 1-6 and 11-13 remain rejected under 35 U.S.C. § 103(a) as being obvious over Honda (U.S. Patent No. 5,851,700). Applicants traverse.

The Present Invention and its Advantages

The present invention pertains to a novel light-scattering sheet that has a light-scattering layer composed of wet spinodally decomposed resins that vary in refractive index and isotropically scatters light. The light scattering layer has a regular phase separation structure having at least a bicontinuous phase structure

formed by wet spinodal decomposition. The invention is typically embodied by instant claim 1, which sets forth:

1. A light-scattering sheet comprising a light-scattering layer which comprises a plurality of resins varying in refractive index and scatters an incident light isotropically, wherein the light-scattering layer has a ratio of a linearly transmitted light to an incident light of 0.1 to 15% and has a phase separation structure having an average interphase distance of 3 to 15 μm ,

wherein the light-scattering layer has a regular phase separation structure having at least a bicontinuous phase structure formed by a wet spinodal decomposition by evaporating or removing a solvent from a liquid phase containing the plurality of resins.

An important aspect of the invention lies in that the light-scattering layer has a regular phase separation structure having at least a bicontinuous phase structure formed by wet spinodal decomposition. The wet spinodal decomposition is achieved by removing a solvent from a resinous liquid phase.

Distinctions of the Invention over Honda

The inability of Honda to suggest the invention has been discussed in the Amendments filed April 15, 2003 and October 2, 2003. Honda fails to disclose or suggest the claimed regular phase separation structure formed by wet spinodal decomposition.

Honda pertains to a filter for a liquid crystal display device having a diffusing plate. Claim 1 of Honda sets forth:

A method for widening a view angle of a liquid crystal display device comprising fitting a filter to a liquid crystal display device, wherein said filter comprises a light diffusing plate which is obtained by shaping into a film a composition comprising at least two photopolymerizable oligomers or monomers having refractive indexes which differ by at least 0.01 and irradiating ultraviolet light on said film of the composition, wherein the polymerizable oligomers or monomers have acrylate functional groups. (claim 1 of Honda).

The light diffusing plate of Honda is fundamentally different from that of the invention. Honda recites:

The filter comprising the light diffusing plate...is produced by utilizing a property of the composition comprising the specific photopolymerizable monomers or oligomers that they are photopolymerized and cured while causing a phase separation by the irradiation of the UV light. This method can produce the filter comprising a refractive index modulating type smooth light diffusing plate having a domain gap of 1 to 20 μm , without the use of a mask during the UV light irradiation. Since the separated phases have a continuous interface between them, no light is reflected at the interface when light passes through the obtained filter, so that the light transmission is not decreased. Since this filter does not have a structure with regularity unlike the phase lattice, it does not form any Moiré fringe. (Honda at column 4, lines 47-60).

Honda discusses resin components varying in refractive index for the light diffusing plate. Honda describes:

A specific example of a combination of the photopolymerizable monomers or oligomers is the combination of at least one component selected from the group consisting of monomers (such as 2, 4, 6-tribromophenyl acrylate, tribromophenoxyethyl acrylate, nonylphenoxyethyl acrylate, 2-hydroxy-3-phenoxypropyl acrylate, phenylcarbitol acrylate, phenoxyethyl acrylate, etc.) and oligomers such as ethylene oxide-modified bisphenol-A diepoxy acrylate, etc., and at least one component

selected from the group consisting of monomers such as triethylene glycol diacrylate, polyethylene glycol diacrylate, neopentyl glycol diacrylate, 1,6-hexanediol diacrylate, etc. and oligomers such as polyol polyacrylate, modified polyol polyacrylate, polybutadiene acrylate, polyether urethane acrylate, etc. (Honda at column 3, lines 9-22).

Example 1 of Honda states:

To a polyether urethane acrylate having an average molecular weight of about 6000 (a refractive index of 1.460) (40 parts) which was obtained by the reaction of polypropylene glycol, hexamethylene diisocyanate and 2-hydroxyethyl acrylate, 2, 4, 6-tribromophenyl acrylate (a refractive index of 1.576) (30 parts), 2-hydroxy-3-phenoxypropyl acrylate (a refractive index of 1.526 (30 parts), and 2-hydroxy-2-methylpropiophenone (1.5 parts) as a photopolymerization initiator were added and mixed to prepare a photopolymerizable composition. (Honda at column 6, lines 6-15).

Regarding the structure of the light diffused-plate (which is fundamentally different from that of the invention), Honda recites:

The filter comprising the light diffusing plate...is produced by utilizing a property of the composition comprising the specific photopolymerizable monomers or oligomers that they are photopolymerized and cured while causing a phase separation by the irradiation of the UV light. This method can produce the filter comprising a refractive index modulating type smooth light diffusing plate having a domain gap of 1 to 20 μm , without the use of a mask during the UV light irradiation. Since the separated phases have a continuous interface between them, no light is reflected at the interface when light passes through the obtained filter, so that the light transmission is not decreased. Since this filter does not have a structure with regularity unlike the phase lattice, it does not form any Moiré fringe (Honda at column 4, lines 47-60).

In respect to the light-scattering property of the light diffused-plate, Honda states:

A selective diffusing property of the light diffusing plate in relation to the incident angle of light is defined by a haze of the plate in relation to the incident angle of light. Preferably, the light diffusing plate...has a property of changing the haze depending on the incident angle of light, and both a light incident angle range with a light diffusing ability of a haze of at least 30% (a diffusing angle range) and other light incident angle range without a light diffusing ability...the maximum haze of the light diffusing plate is preferably in the range between 30% and 85%. (Honda at column 4, lines 29-42).

Furthermore, "When the filter comprising the light diffusing plate...is fitted to the light emitting side of the liquid crystal display device, it is preferably assembled in a laminate by inserting it between the outer surface of the device and a transparent substrate." (Honda at column 4, line 66 to column 5, line 3).

Honda, however, fails to disclose or suggest i) regularity of phase separation structure, and ii) wet spinodal decomposition. Concretely, though Honda discloses photopolymerization and curing with the UV light, Honda fails to teach or suggest wet spinodal decomposition by evaporating or removing a solvent from a liquid phase.

Specifically, since Honda's production method entails polymerizing by the irradiation of UV light, the phase separation is conducted in a short period of time during the polymerizing process of monomers or oligomers. Accordingly, the plate of Honda fails to have the high regularity of the phase separation structure,

which is apparent from the fact that Honda teaches at column 4, lines 60-61: "this filter does not have a structure with regularity unlike the phase lattice."

On the other hand, according to the wet spinodal decomposition of the present invention, the phase separation proceeds gradually by evaporating a solvent. Thus, the light-scattering layer of the present invention has the requisite high regularity of the phase separation structure. That is, the wet spinodal decomposition and the regularity of the phase separation structure would not be deduced from Honda. Therefore, the subject matter of the present invention would never be predicted from Honda by one having ordinary skill.

Incidentally, regarding Applicants' arguments filed on October 2, 2003, the Examiner asserts in his Response to Arguments that the ultra violet polymerization method is exemplified in the present description (page 31 of the lines 18-24 of the specification) and further alleges that the Applicants have not cited any method as being a best mode. Thus, it seems that the Examiner considers all methods (the ultra violet polymerization method, a dry spinodal decomposition method and a wet spinodal decomposition method) to be substantially equal on their merits. However, specification describes that "a wet spinodal decomposition method is preferred", at page 31, line 27. Further, the Examples are conducted by the wet spinodal decomposition method.

Therefore, the wet spinodal decomposition of the present invention has considerably differences from Honda's production method. Thus the plate of Honda does not have a regularity of a phase separation structure (column 4 of Honda, lines 59-60: "Since this filter does not have a structure with regularity unlike the phase lattice, it does not form any Moiré fringe."

Further, the Examiner is using the single reference of Honda to allege obviousness, and asserts that subject matter undisclosed by Honda would be obvious to one having ordinary skill.

To establish a *prima facie* case of obviousness, "the prior art reference (or references when combined) must teach or suggest all the claim limitations." MPEP §2143. In addition, if a reference needs to be modified to achieve the claimed invention "there must be a showing of a suggestion or motivation to modify the teachings of that reference to the claimed invention in order to support the obviousness conclusion." Sibia Neurosciences Inc. v. Cadus Pharmaceutical Corp., 55 USPQ2d 1927 (Fed. Cir. 2000).

However, the Examiner has produced no evidence of a showing or suggestion to modify Honda other than the assertion in the Office Action at page 4, line 5 that "Honda is evidence . . ."

Further, the Examiner turns to the Applicants' disclosure to help allege obviousness (see, e.g., Office Action at page 3, line 5 and page 4 line 3). However, utilizing the disclosure absent a clear admission of prior art has been held to be

improper. "The court must be ever alert not to read obviousness into an invention on the basis of the Applicant's own statements, that is, we must view the prior art without reading into that art appellant's teachings." In re Nomiya, 509 F.2d 566, 184 USPQ 607, 612 (CCPA 1975) (Figures in the application labeled "prior art" held to be admission that what was pictured was prior art relative to Applicant's invention). See also Riverwood International Corporation v. R.A. Jones & Co., Inc., 324 F.3d 1346, 66 USPQ2d 1331 (Fed. Cir. 2003).

A person having ordinary skill in the art, as a result, would not be motivated by Honda to produce the invention as is embodied by claim 1. Claims dependent upon claim 1 are patentable for at least the above reasons. Thus a *prima facie* case of obviousness has not been made over Honda.

This rejection is accordingly overcome and withdrawal thereof is respectfully requested.

Conclusion

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert E. Goozner, Ph.D. (Reg. No. 42,593) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Appl. No. 09/961,287
Amendment Under 37 C.F.R. 1.111 dated May 26, 2004
Reply to Office Action dated February 26, 2004

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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